Claims:

1. A method of enhancing efficiency of downstream chromatography steps for purification of antibodies comprising:

a. passing a composition comprising an antibody of interest and various contaminants through an ion exchange membrane, wherein the antibody and the membrane have opposite charge, at operating conditions comprised of a buffer having a pH sufficiently distinct from the pI of the antibody to enhance the charge of the antibody and a low ionic strength effective to prevent the shielding of charges by buffer ions, which cause the membrane to bind the antibody and at least one contaminant;

b. overloading the ion exchange membrane to a load density of 1000-5000 g/L such that at least one contaminant remains bound to the membrane while the antibody of interest is primarily in the effluent;

c. collecting the effluent from the ion exchange membrane comprising the antibody of interest;

d. subjecting the membrane effluent comprising the antibody of interest to a ion exchange chromatography step of similar charge as the previous membrane , and

e. recovering the purified antibody from the effluent of the charged ion exchange chromatography step.

2. The method of claim 1 wherein the ion exchange membrane has a pore size of 0.1 to 100 μm.

3. The method of claim 1 wherein the ion exchange membrane is replaced by a monolith or depth filter.

4. A method of enhancing efficiency of downstream chromatography steps for purification of antibodies comprising:

a. passing a composition comprising an antibody of interest and various contaminants through a cation exchange membrane, wherein the antibody and the membrane have opposite charge, at operating conditions comprised of a buffer having a pH of about 1 to about 5 pH units below the pI of the antibody and a conductivity of < about 40 mS/cm, which cause the membrane to bind the antibody and at least one contaminant,

b. overloading the cation exchange membrane to a load density of 1000-5000 g/L such that at least one contaminant remains bound to the membrane while the antibody of interest is primarily in the effluent;

c. collecting the effluent from the cation exchange membrane comprising the antibody of interest;

d. subjecting the membrane effluent comprising the antibody of interest to a cation exchange chromatography purification step, and

e. recovering the purified antibody from the effluent of the cation exchange chromatography purification step.

5. The method of claim 4 wherein the pH is about 1 to about 4 pH units below the pI of the antibody.

6. The method of claim 4 wherein the pH is about 1 to about 3 pH units below the pI of the antibody.

7. The method of claim 4 wherein the pH is about 1 to about 2 pH units below the pI of the antibody.

8. The method of claim 4 wherein the pH is about 1 pH unit below the pI of the antibody.

9. The method of claim 4 wherein the conductivity is < about 20 mS/cm.

10. The method of claim 4 wherein the conductivity is < about 10 mS/cm.

11. The method of claim 4 wherein the cation exchange membrane is a cation exchange monolith or depth filter.

12. A method of enhancing efficiency of downstream chromatography steps for purification of antibodies comprising:

a. passing a composition comprising an antibody of interest and various contaminants through an anion exchange membrane, wherein the antibody and the membrane have opposite charge, at operating conditions comprised of a buffer having a pH of about 1 to about 5 pH units above the pI of the antibody and a conductivity of < about 40 mS/cm, which cause the membrane to bind the antibody and the at least one contaminant,

b. overloading the anion exchange membrane to a load density of 1000-5000 g/L such that at least one contaminant remains bound to the membrane while the antibody of interest is primarily in the effluent;

c. collecting the effluent from the anion exchange membrane comprising the antibody of interest;

d. subjecting the membrane effluent comprising the antibody of interest to a anion exchange chromatography purification step, and

e. recovering the purified antibody from the effluent of the anion exchange chromatography purification step.

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